

WHAT IS CLAIMED IS:

1. A magnetic transfer apparatus comprising:

a support mechanism designed to support a magnetic disk;
and

a magnetizing mechanism designed to get opposed to the magnetic disk held by the support mechanism, said magnetizing mechanism applying a magnetic field of variable intensity in response to a change of position in a radial direction of the magnetic disk.

2. The magnetic transfer apparatus according to claim 1, wherein said magnetizing mechanism comprises:

a master magnetic body contacting against the magnetic disk a contact surface bordered along a contour of a servo pattern, said master magnetic body defining in the contact surface a depression corresponding to a shape of the servo pattern, a circumferential extent of the depression being set larger at an outer position of the magnetic disk than an inner position of the magnetic disk;

a magnet designed to face the master magnetic body, said magnet applying a magnetic field to the master magnetic body so as to form a magnetic field for writing within the depression;
and

a position sensor related to the magnet so as to detect a position of the magnet in the radial direction of the magnetic disk.

3. The magnetic transfer apparatus according to claim 2, further comprising a magnetic intensity adjusting mechanism related to the magnet, said magnetic intensity adjusting mechanism designed to drive the magnet for rotation around a

rotation axis intersecting a surface of the magnetic disk in accordance with the position of the magnet.

4. The magnetic transfer apparatus according to claim 3, wherein said support mechanism comprises:

a driving shaft receiving the magnetic disk; and

a controlling mechanism related to the driving shaft, said controlling mechanism designed to change a rotation speed of the driving shaft in accordance with the position of the magnet.

5. The magnetic transfer apparatus according to claim 1, wherein said magnetizing mechanism comprises:

a master magnetic body contacting against the magnetic disk a contact surface bordered along a contour of a servo pattern, said master magnetic body defining in the contact surface a depression corresponding to a shape of the servo pattern, a circumferential extent of the depression being set larger at an outer position of the magnetic disk than an inner position of the magnetic disk;

an electromagnet designed to face the master magnetic body, said electromagnet generating a magnetic field in response to supply of an electric power so as to form a magnetic field for writing within the depression; and

a magnetic intensity adjusting mechanism related to the electromagnet, said magnetic intensity adjusting mechanism designed to change a magnitude of the electric power in accordance with a displacement of the electromagnet in the radial direction of the magnetic disk.

6. The magnetic transfer apparatus according to claim 6, wherein said magnetic intensity adjusting mechanism is designed

to drive the electromagnet for rotation around a rotation axis intersecting a surface of the magnetic disk in accordance with the displacement of the electromagnet.

7. The magnetic transfer apparatus according to claim 6, wherein said support mechanism comprises:

a driving shaft receiving the magnetic disk; and

a controlling mechanism related to the driving shaft, said controlling mechanism designed to change a rotation speed of the driving shaft in accordance with the displacement of the electromagnet.

8. The magnetic transfer apparatus according to claim 1, wherein said magnetizing mechanism comprises:

a master magnetic body contacting against the magnetic disk a contact surface bordered along a contour of a servo pattern, said master magnetic body defining in the contact surface a depression corresponding to a shape of the servo pattern, a circumferential extent of the depression being set larger at an outer position of the magnetic disk than an inner position of the magnetic disk;

a magnet designed to face the master magnetic body, said magnet applying a magnetic field to the master magnetic body so as to form a magnetic field for writing within the depression; and

a magnetic intensity adjusting mechanism related to the magnet, said magnetic intensity adjusting mechanism designed to generate a displacement of the magnet in a vertical direction perpendicular to a surface of the magnetic disk in response to a displacement of the magnet in the radial direction of the magnetic disk.

9. The magnetic transfer apparatus according to claim 8, wherein said magnetic intensity adjusting mechanism is designed to drive the magnet for rotation around a rotation axis intersecting a surface of the magnetic disk in accordance with the displacement of the magnet in the radial direction.

10. The magnetic transfer apparatus according to claim 9, wherein said support mechanism comprises:

a driving shaft receiving the magnetic disk; and

a controlling mechanism related to the driving shaft, said controlling mechanism designed to change a rotation speed of the driving shaft in accordance with the displacement of the magnet in the radial direction.

11. The magnetic transfer apparatus according to claim 1, wherein said magnetizing mechanism comprises:

a master magnetic body contacting against the magnetic disk a contact surface bordered along a contour of a servo pattern, said master magnetic body defining in the contact surface a depression corresponding to a shape of the servo pattern, a circumferential extent of the depression being set larger at an outer position of the magnetic disk than an inner position of the magnetic disk;

a magnet designed to face the master magnetic body, said magnet applying a magnetic field to the master magnetic body so as to form a magnetic field for writing within the depression; and

a magnetic intensity adjusting mechanism related to the magnet, said magnetic intensity adjusting mechanism designed to drive the magnet for rotation around a rotation axis

intersecting a surface of the magnetic disk in accordance with the displacement of the magnet in the radial direction.

12. The magnetic transfer apparatus according to claim 11, wherein said support mechanism comprises:

a driving shaft receiving the magnetic disk; and

a controlling mechanism related to the driving shaft, said controlling mechanism designed to change a rotation speed of the driving shaft in accordance with the displacement of the magnet in the radial direction.

13. The magnetic transfer apparatus according to claim 1, wherein said magnetizing mechanism comprises:

a master magnetic body contacting against the magnetic disk a contact surface bordered along a contour of a servo pattern, said master magnetic body defining in the contact surface a depression corresponding to a shape of the servo pattern, a circumferential extent of the depression being set larger at an outer position of the magnetic disk than an inner position of the magnetic disk; and

a pair of magnetic poles spaced from the master magnetic body at variable distances in accordance with positions in the radial direction of the magnetic disk.

14. The magnetic transfer apparatus according to claim 13, further comprising a magnetic intensity adjusting mechanism designed to drive the magnetic poles for rotation around a rotation axis intersecting a surface of the magnetic disk.

15. The magnetic transfer apparatus according to claim 14, wherein said support mechanism comprises:

a driving shaft receiving the magnetic disk; and
a controlling mechanism related to the driving shaft, said controlling mechanism designed to change a rotation speed of the driving shaft in accordance with an angle of the rotation of the magnetic poles.

16. The magnetic transfer apparatus according to claim 1, wherein said magnetizing mechanism comprises:

a master magnetic body contacting against the magnetic disk a contact surface bordered along a contour of a servo pattern, said master magnetic body defining in the contact surface a depression corresponding to a shape of the servo pattern, a circumferential extent of the depression being set larger at an outer position of the magnetic disk than an inner position of the magnetic disk; and

a pair of magnetic poles designed to face the master magnetic body, said magnetic poles being spaced from each other at variable distances in accordance with positions in the radial direction of the magnetic disk.

17. The magnetic transfer apparatus according to claim 16, further comprising a magnetic intensity adjusting mechanism designed to drive the magnetic poles for rotation around a rotation axis intersecting a surface of the magnetic disk.

18. The magnetic transfer apparatus according to claim 17, wherein said support mechanism comprises:

a driving shaft receiving the magnetic disk; and
a controlling mechanism related to the driving shaft, said controlling mechanism designed to change a rotation speed of the driving shaft in accordance with an angle of the rotation

of the magnetic poles.

19. The magnetic transfer apparatus according to claim 1, wherein said magnetizing mechanism comprises:

a master magnetic body contacting against the magnetic disk a contact surface bordered along a contour of a servo pattern, said master magnetic body defining in the contact surface a depression corresponding to a shape of the servo pattern, a circumferential extent of the depression being set larger at an outer position of the magnetic disk than an inner position of the magnetic disk; and

a pair of magnetic poles designed to face the master magnetic body, said magnetic poles generating a flow of magnetic flux in at least first and second directions within a plane including a surface of the magnetic disk.

20. The magnetic transfer apparatus according to claim 19, wherein a curved surface is defined on at least one of the magnetic poles, the curved surface being opposed to other of the magnetic poles.

21. The magnetic transfer apparatus according to claim 20, wherein said support mechanism comprises:

a driving shaft receiving the magnetic disk; and

a controlling mechanism related to the driving shaft, said controlling mechanism designed to change a rotation speed of the driving shaft in accordance with a displacement of the magnetic poles in the radial direction of the magnetic disk.